APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
MEISLAHN, DOUGLAS J

ART UNIT	PAPER NUMBER
2132	

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/484,742	RHOADS, GEOFFREY B.
	Examiner	Art Unit
	Douglas J. Meislahn	2132

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2000* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-67* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .   6)☐ Other: .

DETAILED ACTION

Priority

1.   Acknowledgement is made of the benefit of an earlier filing date of Application

No. 08/951858, now U.S. Patent No. 6026193, filed 16 October 1997, Application No.

08/436134, now U.S. Patent No. 5748763, filed 08 May 1995, Application No.

08/327426, now U.S. Patent No. 5768426, filed 21 October 1994, Application No.

08/215289, now abandoned, filed 17 March 1994, and Application No. 08/154866, now

abandoned, filed on 18 November 1993.

2.   Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

However, Application No. 08/215289, now abandoned, filed 17 March 1994, and

Application No. 08/154866, now abandoned, filed on 18 November 1993 upon which

priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 26-

67 of this application. These applications do not support processing input audio data to

steganographically encode a code. Furthermore, none of the parent applications that

are related by continuation-in-part (i.e., 08/154866, 08/215289 and 08/327426) include

any mention of the use of a "lossy" compression or any suggestion that the embedded

auxiliary data can be recovered from the non-identical signal resulting from the

compression and decompression.***Information Disclosure Statement***

3.   The information disclosure statement filed 12 May 2003 fails to comply with 37

CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each

publication or that portion which caused it to be listed; and all other information or that

portion which caused it to be listed. It has been placed in the application file, but the

information referred to therein has not been considered. References from the first page

of the IDS are not currently in the file. The office can provide copies of the US patents,

but applicant's help is requesting in obtaining the non-patent documents: the two

Bender et al. articles, Koch et al.'s "Copyright Protection for Multimedia Data",

"Electronic Watermark" by Tirkel, and "A Digital Watermark" by van Schyndel.

Specification

4.   The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

Claim Objections

5.   Claim 41 is objected to because of the following informalities: in the eighth line,

"encoded audio signal" should either be pluralized or "an" should be placed at its

beginning. Appropriate correction is required.

Double Patenting

6.   The nonstatutory double patenting rejection is based on a judicially created
doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the
unjustified or improper timewise extension of the "right to exclude" granted by a patent
and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11
F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225
USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA
1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*,
418 F.2d 528, 163 USPQ 644 (CCPA 1969).
      A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be
used to overcome an actual or provisional rejection based on a nonstatutory double
patenting ground provided the conflicting application or patent is shown to be commonly
owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7.   Claims 27-31, 37, and 38 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 53-56 of U.S. Patent No. 6404898. Although the conflicting claims are not identical, they are not patentably distinct from each other because the invention claimed in the instant claims would have been obvious to a person of ordinary skill in the art in view of the subject matter disclosed in the Rhoads '898 patent. Specifically, the first step of the instant application's claim 27 recites, "providing an input audio signal representing a plurality of sequential series of audio data, each series comprising a plurality of samples, each sample having a value associated therewith" while the patented claim's first clause reads, "providing an input content signal comprising a plurality of samples, each sample having a value associated therewith". While the patented claim fails to specifically define the input signal as representing a plurality of sequential series of audio data, the patented claim is directed to audio content signals, which are a plurality of sequential series of audio data. The obviousness of the differences between the second clauses, the compression clauses, the decompression clauses, and the discerning clauses is understood from the comparison of the first clauses. The patented claim does not make specific reference to repeating the step of transforming the values of pixels to redundantly encode the auxiliary data into the audio samples. The patented claim does teach processing plural, redundantly-encoded excerpts. Excerpts are equivalent to series. Redundantly-encoded excerpts render obvious repeating the step of

transforming a plurality of series according to the auxiliary data. Claim 28 is largely identical to the last clause of claim 53 in the patent. The differences are obvious based on the preceding comparison. Claim 29 is, by itself, identical to patented claim 54. Claims 30 and 31 in the application are likewise and respectively the same as claims 55 and 56 in the patent. Claims 37 and 38 are obvious because of the following; the redundant insertion of auxiliary data requires that this data be placed in multiple blocks; the data can be inserted either one bit per block that is encoded, or multiple bits per block that is encoded. One is necessary and hence inherent to the system. The flexibility to decide which is obvious to a person of ordinary skill in the art.

8.   Claim 32 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 53 of U.S. Patent No. 6404898 in view of Nishikawa et al. (5129011). Claim 32 in the instant application depends from claim 27, which has previously been shown to be obvious in light of claim 53 of the allowed patent. Claim 53 does not teach that the compressed data is stored on an optically encoded storage disk. In lines 26-47 of column 12, Nishikawa et al. present compressed data stored on an optical disk. As such, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to store the compressed data of patented claim 53 on an optical disk.

9.   Claims 33-36 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 53 of U.S. Patent No. 6404898 in view of Barton (5646997). Claim 33 in the instant application depends from claim 27, which has previously been shown to be obvious in light of claim 53 of the allowed

patent, and claim 34 depends from 33. Claim 53 teaches a method of redundantly

embedding auxiliary data in audio data so that the auxiliary data can survive being

compressed and decompressed. Claim 53 does not teach converting the

decompressed data to analog form and then back to digital. In lines 17-21 of column

11, Barton discloses converting data encoded with auxiliary data into non-digital, or

analog, form. Therefore it would have been obvious to a person of ordinary skill in the

art at the time the invention was made to convert the data in patented claim 53 to

analog form, as taught by Barton. It is further obvious to reconvert that data to digital, in

the case of a picture being printed and then scanned, a digital message being

transmitted over a wave, etc. Finally, Barton teaches transforming using pseudo-

random noise in the time domain in lines 31-45 of column 7.

10.   Claims 39-46, 48, 49, and 65-67 are rejected under the judicially created doctrine

of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S.

Patent No. 6542618 in view of Gniewek et al. (5265082).

The preambles of claim one in the patent and claim 39 in the application differ in

that the patent is directed to video and the application is directed to audio. This is also

the only difference in the first clause of the claims. The second clauses are identical.

Gniewek et al. teach that authentication materials, such as applicant's multi-bit auxiliary

data, are useful in both audio and video data (lines 27-61 of column 8) and that

techniques that generally apply to one will apply to the other. Therefore it would have

been obvious to a person of ordinary skill in the art at the time the invention was made

to apply the teachings in the patent to the an audio system, such as that described in the application.

Patented claim 2 is the video embodiment of the application's claim 40. Patented claim 3 corresponds to claim 41 in the application. The patented claim defines a value N, which is set according to a desired confidence level and which defines the number of image frames to be processed to extract the auxiliary data. The application's corresponding claim does not explicitly set N, but it does a variable number of series, rendering obvious N. Other differences are obvious because of Gniewek et al. Claim 4 in '618 corresponds with application claim 42. Claims 43-45 are similarly related to claims 5-7 in the patented case. For example, MPEG-encoded video in '618 relates to audio data in the application. Spatial domains correspond to temporal domains rather than a transformed, frequency domain, as required by the application's 46th claim. In regard to claims 48 and 49 of the instant application, claims 9 and 10 of the patent show processing encoded video with a pseudo-random key signal to de-randomize the multi-bit auxiliary data steganographically encoded therein. This process is identical to that of claim 48 except that audio data replaces the patent's video data. With respect to claims 65-67 in the application, claims 11-13 in '618 show the non-audio elements, which have been shown to be obvious by Gniewek et al.

11.   Claims 47 and 51-64 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6026193 in view of Gniewek et al. (5265082).

Claim 47 in the patent and claim 1 in '193 are both directed to a method of decoding media to extract a multi-bit auxiliary data signal by computing a dot product between a representation of the encoded media and reference data for several segments of the media, combining outcomes of the dot product computations, comparing the combination result with a threshold and determining at least a part of the multi-bit auxiliary data from the comparison. The instant application discloses the media as audio data while the patent has the media as video. Gniewek et al. teach that authentication materials, such as applicant's multi-bit auxiliary data, are useful in both audio and video data (lines 27-61 of column 8) and that techniques that generally apply to one will apply to the other. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the teachings in the patent to the an audio system, such as that described in the application's claims.

Claims 2 and 3 in the patent correspond to claims 51 and 52 in the application, with their differences stemming from the former's disclosure in a video system and the latter's in an audio environment. Similarly, claims 4-15 are the video corollaries of the application's claims 53-64. Of special note, the time domain is the audio corollary of video's spatial image domain.

Claim Rejections - 35 USC § 112

12.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13.   Claims 26-67 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

14.   Claim 26 recites the limitation "said embedded auxiliary data" in the fourth line.

There is insufficient antecedent basis for this limitation in the claim. Change "said" to

"the".

15.   Claim 27 recites the limitation "the complete auxiliary data" in the tenth line and

"the foregoing step" in the eleventh line. There is insufficient antecedent basis for this

limitation in the claim. For the former problem, delete either "the" or "complete". In

interpreting the claim, the examiner understood "the foregoing step" to be the

transforming action.

16.   Claims 30 and 31 recite the limitation "said discerned auxiliary multi-bit data" in

their second lines. There is insufficient antecedent basis for this limitation in the claims.

Change "said" to "the".

17.   Claim 32 recites the limitation "said decoding step" in the second to last line.

There is insufficient antecedent basis for this limitation in the claim. The claim has been

interpreted as though "decoding" had been "decompressing". Also, the steps of claim

27 have never actually been titled as such, and hence "said" should be changed to

"the".

18.   Claim 35 recites the limitations "said steps" and "the time domain" in the first line.

There is insufficient antecedent basis for this limitation in the claim. As mentioned

above, the steps have never been called such; the examiner recommends adding "the steps of" at the end of claim 27's preamble.

19.   Claims 37 and 38 recites the limitation "said auxiliary data signal" across the last two lines of the claims. There is insufficient antecedent basis for this limitation in the claims. Also, the former uses the term "single samples" while the latter says "signal samples"; while neither is indefinite, the examiner guesses that the two were meant to be same.

20.   Claim 39 recites the limitations "said encoding" and "the form" in the sixth line of the claim, "said audio signal" across lines six and seven, "the entropies" in the eighth line, "said computed parameters" in the second to last line, and "the value of at least one bit of said multi-bit auxiliary data signal". There is insufficient antecedent basis for these limitations in the claim. Delete "said" before "encoding", change "taking the form of" to "being", change "said" to "an unencoded" before "audio signal" (the claim has heretofore only referred to the encoded audio signal, not the encoded audio signal as it existed prior to encoding), delete "the" before "entropies", change "said" to "the" in front of "computed parameters, and "the" to "a" in the last offending phrase.

21.   Claims 41, 48, and 50 recite the limitations "said encoding" and "the form" in the sixth line of the claims and "said audio signal" across lines six and seven. There is insufficient antecedent basis for these limitations in the claims.

22.   Claim 43 recites the limitation "said extracted auxiliary data signal" in the second line. There is insufficient antecedent basis for this limitation in the claim. Insert "multi-bit" after "extracted".

23.   Claim 46 recites the limitation "the time domain" across the last two lines. There

is insufficient antecedent basis for this limitation in the claim.

24.   Claim 47 recites the limitations "said encoding" and "the form" in the sixth line of

the claim, "said audio signal" across lines six and seven, "the outcome" in the ninth line,

"said combined dot product computations" across lines nine and ten, "the value of at

least a part of said multi-bit auxiliary data" across lines ten and eleven, and "said

comparison" in the last line. There is insufficient antecedent basis for these limitations

in the claim. Change "the" to "an" before "outcome", change "said" to "the" before

"combined" and drop "computations", change "the" to "a" before "value" in the offending

phrase, and change "said" to "the" before "comparison".

25.   Claim 51 recites the limitation "said audio data" in the second line and proceeds

to extract data from it. Only when encoded (and referred to as encoded audio data)

would audio data have extractable data. Insert "encoded" before "audio".

26.   Claims 52 and 54 recite the limitation "said extracted auxiliary data" in their last

lines. There is insufficient antecedent basis for this limitation in the claim. Change

"said" to "the".

27.   Claim 59 recites the limitation "the time domain" in its only line. There is

insufficient antecedent basis for this limitation in the claim.

28.   Claim 65 recites the limitations "said encoding" and "the form" in the sixth line of

the claim, "said audio signal" across lines six and seven, "said combined dot products"

in the second to last line, and "said discerned data" in the last line. There is insufficient

antecedent basis for these limitations in the claim. Change "said" to "the" before both

"combined" and "discerned".

29.   Claim 65 recites the limitation "said series" across lines eight and nine. A first

series and sequential series of audio data have been presented in the claim, and hence

"said series" is ambiguous.

30.   Claim 66 recites the limitation "said discerned auxiliary data" across its middle

two lines. There is insufficient antecedent basis for this limitation in the claim. Change

"said" to "the".

Claim Rejections - 35 USC § 103

31.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

32.   Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moses

(5404377) in view of Schwab et al. (5134496).

Moses presents a system of that includes an audio channel, line six of the

abstract, which reads on applicant's "source of data corresponding to an audio signal".

The second NN (neural network), described in the last seven lines of the abstract,

detects data embedded in an audio signal, where the detected data corresponds to

applicant's embedded multi-bit auxiliary data and control signal. As described in lines

six through nine of the abstract, the audio signal masks the embedded signals, thus

anticipating that they be substantially imperceptible to a human listener. Moses does

not say that the data decoded from the audio signal is used to inhibit copying of the

audio signal. In their abstract and summary of the invention, Schwab et al. teach the

use of imperceptibly embedded signals to prevent illicit copying of a data signal.

Therefore it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to use the data embedded in Moses' audio signal to protect that

data from illegal copying, as taught by Schwab et al.

O'Grady et al. teach a method of decoding encoded video to extract multi-bit

auxiliary data therefrom, the encoded video representing a video sequence including

plural image frames (column 2, line 61; plural video frames mentioned), the multi-bit

auxiliary data being steganographically encoded therein, the multi-bit auxiliary data thus

being generally imperceptible to human viewers of the video sequence corresponding to

the encoded video (lines 43-46 of column 1; the message data is embedded

"unobtrusively"), the encoding taking the form of slight changes to portions of the video

representing image information to thereby represent the multi-bit auxiliary data (column

1, lines 43-53; the low-level waveform is added to the original video at a level

significantly below the noise level, so that the changes made are small), wherein the

method includes applying the encoded video to a matched filter processing unit (68 and

70 in figure 2; encoded video from 42 is input to 68; column 4, lines 13-17), applying a

reference signal to the matched filter processing unit (reference waveform from memory

58 is also input to 68 in figure 2; column 4, lines 13-17), and processing plural frames of

the encoded video with the processing unit to extract the multi-bit auxiliary data

therefrom (68 and 70 operate to calculate a correlation coefficient by correlating each

frame with the reference waveform and summing the correlation results to detect the

embedded waveform; see column 3, lines 38-50). O'Grady et al.'s system is explicitly

for video, not audio like in the claims. Gniewek et al. teach that authentication

materials, such as applicant's multi-bit auxiliary data, are useful in both audio and video

data (lines 27-61 of column 8) and that techniques that generally apply to one will apply

to the other. Therefore it would have been obvious to a person of ordinary skill in the art

at the time the invention was made to apply Gniewek et al.'s teaching of the versatility of

watermarking techniques to O'Grady et al.'s system to create an audio corollary.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Douglas J. Meislahn whose telephone number is (703)

305-1338. The examiner can normally be reached on between 9 AM and 6 PM,

Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Gilberto Barrón can be reached on (703) 305-1830. The fax phone number

for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

Douglas J. Meislahn
Examiner
Art Unit 2132

DJM